



**ERMAKSAN**

METAL FABRICATING MACHINERY

*innovative technologies.*

# **FIBERMAK** Momentum Gen-2

New Generation Fiber Laser





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*innovative technologies.*

[www.ermaksan.com.tr](http://www.ermaksan.com.tr)

## After half a century, Ermaksan is moving confidently into the future

With 48 years of technological investment and innovative R&D department, Ermaksan has become one of the world's leading companies in the sheetmetal fabricating machinery industry.

Ermaksan is a pioneer in the industry with strong R&D department, 860,000 sq.ft. modern production facility, highly qualified team of 700 staff dedicated to high quality manufacturing of our machine tools .

Our factory is equipped with the latest industry leading precision CNC machines. Under the supervision of expert engineers, the factory manufactures 3,000+ machines annually. Ermaksan is one of the world's leading companies in the industry represented by exclusive dealers around the world with strong technical support in 70 countries.

Ermaksan designs and manufactures durable, productive, and value based machinery. We do this by, continuously meeting customer demands and exceeding industry standards towards sustainable growth.

High Tech  
CNC Machines  
manufactured by  
Ermaksan;

- New Generation Fiber Lasers
- CO<sub>2</sub> Lasers
- Press Brakes
- Servo Motorized Hybrid Press Brakes
- Plasma Cutting Machines
- Punch Presses
- Shear Cutters
- Iron Workers

## FIBER LASER TECHNOLOGY

## FIBERMAK MAIN BODY

The Fibermak, built for long-life with precision components and its rigid construction, is able to work continuously and precisely in the most severe conditions.

New Generation Fiber Laser.

# FIBERMAK

## Momentum Gen-2

### What is Laser?

- A Laser is the abbreviation of "Light Amplification of Stimulated Emission of Radiation"
- The Foundation of the Laser depends on the photons, which are created by electron transfers between different energy levelled particles.

### Internal structure of laser unit

- The ytterbium laser light is created inside the laser unit. Laser light created at the resonator is transferred to the cutting head by the fiber-optic cable without loss of power or quality. Thus, a light with a high beam quality appropriate for metal cutting is provided.

### Sheet metal working with a Fiber

#### Laser

- Sheet metal processing is one way of using the laser light beam. The latest technology in flat sheet metal working machinery is the solid state laser, also known as the Fiber Laser.

- Brief description of cutting with Fiber:

Laser light created in the resonator is transferred flawlessly by fiber-optic cable to the surface of the

sheet. The cutting process begins when laser light and assist gases (oxygen, nitrogen or compressed air) are focused on the material. With the help of proven technology tables all axes are controlled precisely and parts are processed without the need for manual intervention.

### Advantages of fiber laser

- Fiber laser cutting is the fastest process for thin sheet metal.
- The cutting process is done with higher quality compared to other options. A "clean cut" surface quality is obtained.
- Reflective materials like aluminium, copper and brass can be cut with ease.
- Excellent surface quality is obtained on mild steel up to 15 mm with a 2 kW resonator and up to 20 mm with 3 kW and 4 kW.
- Part process cost is very low.
- Little to no maintenance costs.
- Consumable part cost is low. The only parts that need to be changed are nozzles, ceramics and lens protection glasses over long periods. There are no other consumable costs.
- Resonator life is over 100.000 hours.

- Drives, encoders, and rails have to be placed on precision surfaces. Even the slightest defects can cause serious damage to drives and encoders. This is why, main body of Fibermak is machined perfectly on Travelling Column Soraluze CNC machine towers.
- Encoders, linear motors and rails on linear model machines and rack & pinions and rails on Servo motor machines are machined on CNC machines with micron-rated precision. This is the foundation of the high tolerance processing achieved with the Fibermak.



# New Generation Fiber Laser.

# FIBERMAK

## Momentum Gen-2

**User Friendly Controller**  
Easily Trainable 15" color touch-screen control.

**Protection Glass**  
Special coated filtering 1080  $\mu\text{m}$  laser wavelength protective windows.

**Shuttle Table**  
Pallet change table for improved productivity and precise sheet positioning.

**New Safety Standards**  
Light curtain protection for working safely according to CE standards.

**Front Door with safety sensor**  
Sliding Front door that stops the system in order to ensure operator safety while the door is open.

**Conveyor**  
Conveyor system that collects fallen small parts and slag in a collection reservoir after cutting.



## STANDARD EQUIPMENT

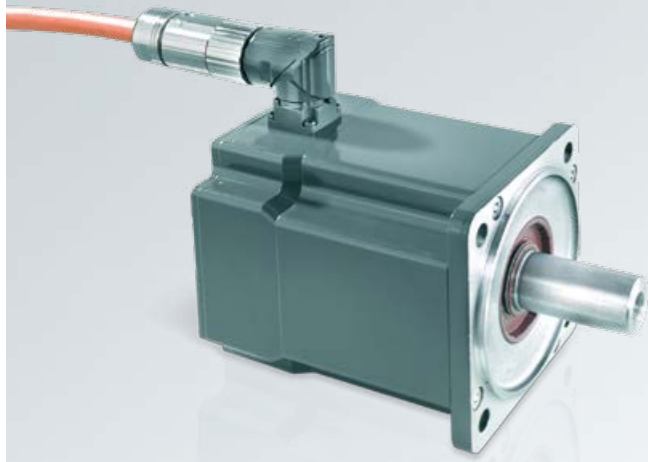
- 4 Axis (X, Y, U, Z)
- Servo Motor
- Auto - focus cutting head
- 2 kW Laser Source
- Chiller Unit
- Clean-dry air system
- Safety Cabinet
- Automatic-Dual Shuttle Table
- CAD/CAM Software ( Lantek, Metalix, Almacam)
- 15" Touchscreen Controller
- Conveyor
- Warning Lamp
- Nozzle Set

**PERFECT** CUT

**EXCELLENT** SPEED

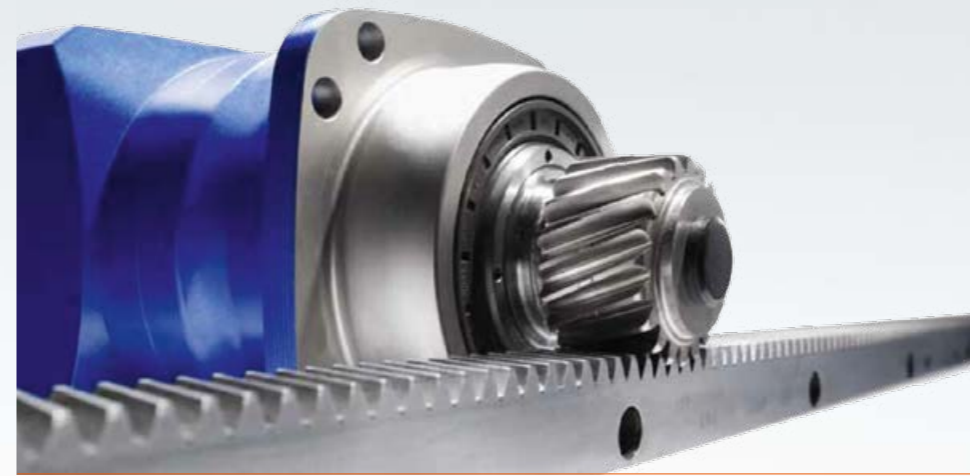
**HIGH** PERFORMANCE





## SINGLE CABLE SERVO MOTOR TECHNOLOGY

- Fibermak has 4 servo motors for all axial movements. These are the latest technology single cable servo motors.
- Power and process data are transmitted in one standard motor cable, significantly reducing costs.
- This technology also gives more accurate positioning and more geometrically accurate parts.

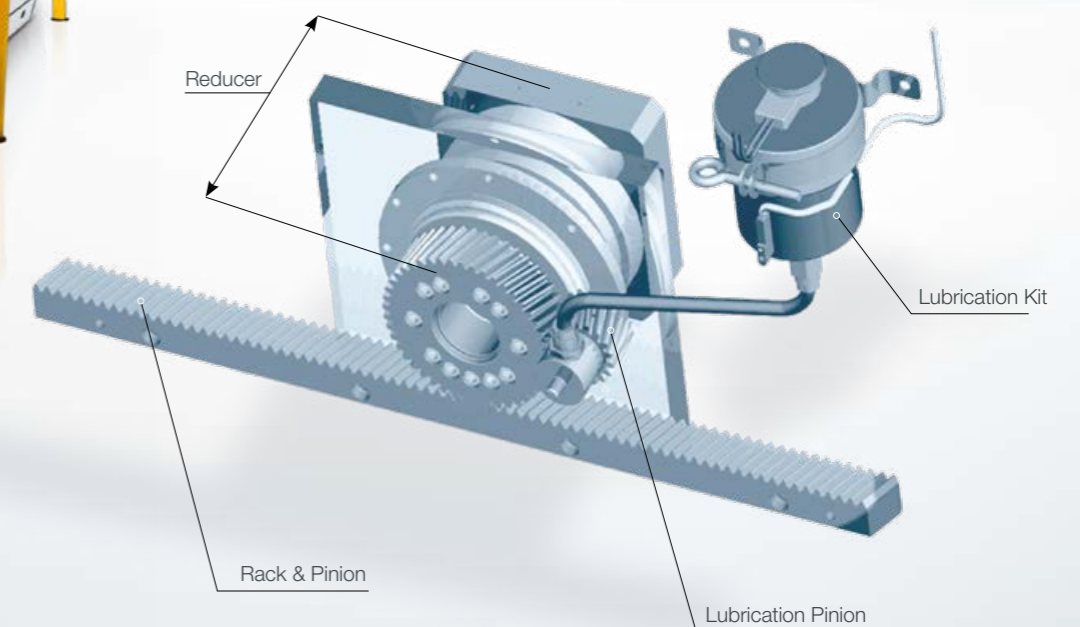


**Servo Motor Fibermak:** is a unique machine having ultra low energy consumption and very fast cutting capability with minimum maintenance cost.



## MAIN ADVANTAGES OF SERVO MOTOR SYSTEMS

- Low investment cost for a high performance machine
- Low energy consumption
- Easy repair and maintenance
- Low repair needs
- High linear rigidity





Laser Source

## LASER SOURCE

- The ytterbium laser light is created inside the laser unit. Excitation is performed by laser diodes enabling high efficiency with low costs. Laser light created at the resonator is transferred to the cutting head by a fiber-optic cable without loss of power or quality. This provides a high beam quality appropriate for metal cutting.
- The Power range of resonator source is between 500W and 6 kW. As the wattage increases so does the cutting speed and capacity respectively.
- Fiber Lasers are inherently made for maintenance free production. The importance is sustainable diode life lasting approximately 100,000 hours.
- In any defective situation, part changing is easy because modules are designed for plug-n-play.



Chiller Unit

## CHILLER UNIT

- The chiller unit cools the laser source, the linear motors, and collimation unit: inside the cutting head.

## EXTRACTION UNIT

- It provides a convenient working area by absorbing little particles and smokes occur while in production. It automatically works once the cutting starts.
- The suction cells open actively according to the cutting heads position. This provides accurate absorption.



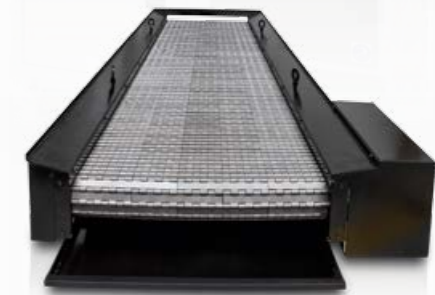
Extraction Unit

## AUTOMATION BOARD

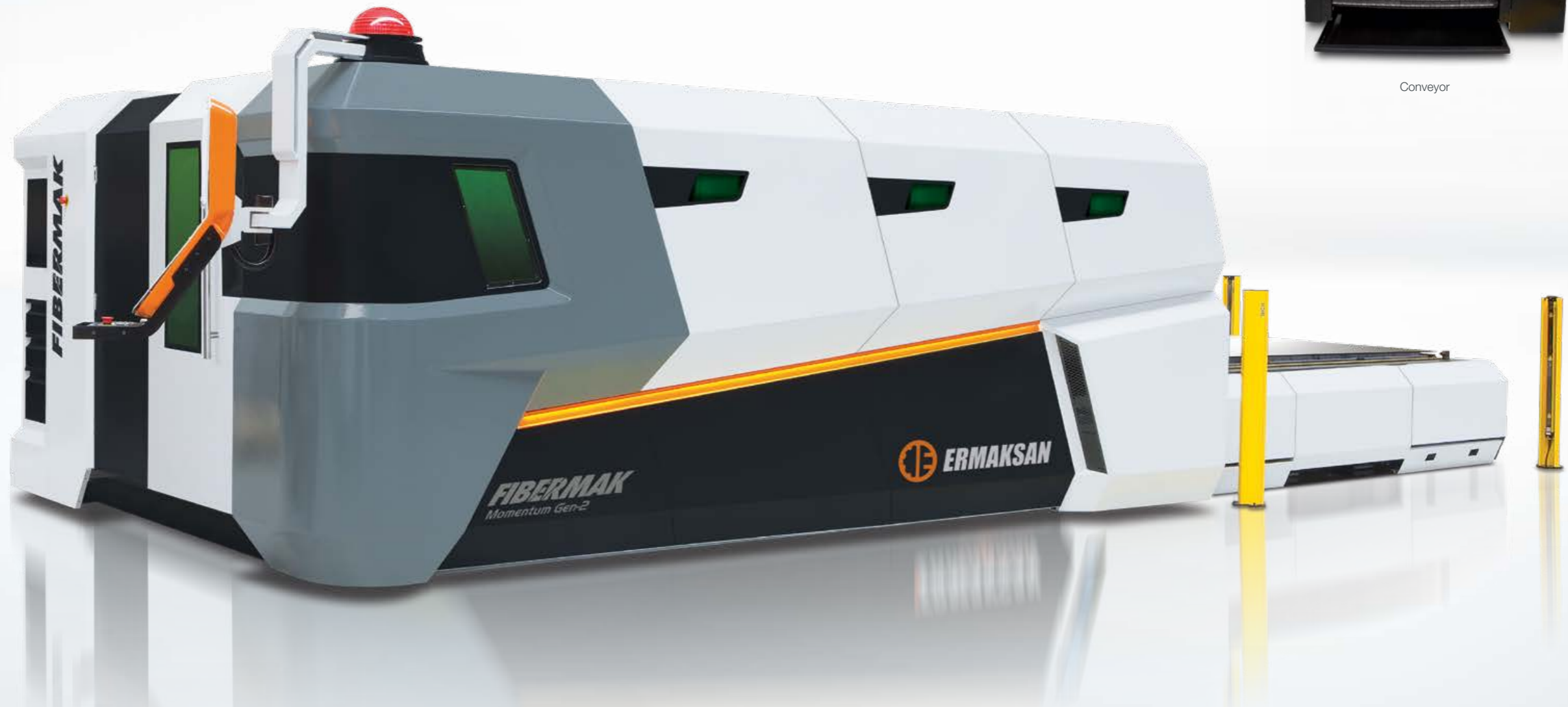
- Fibermak's automation equipment modules consist of Drivers, IO units, height sensor, focal unit, Shuttle table equipment etc. and their connections.
- The automation Board enables the correct connection and cabling in the system resulting in a less defective ratio.

## CONVEYOR

- The conveyor is situated under the cutting area where small parts and scraps drop to a wheeled container.



Conveyor



## SHUTTLE TABLE

- It has two dynamic tables allowing continuous production while processing goes on. The operator collects cut parts and loads the next material for processing. Fully automated loading – unloading systems.

### Shuttle with balanced control system.

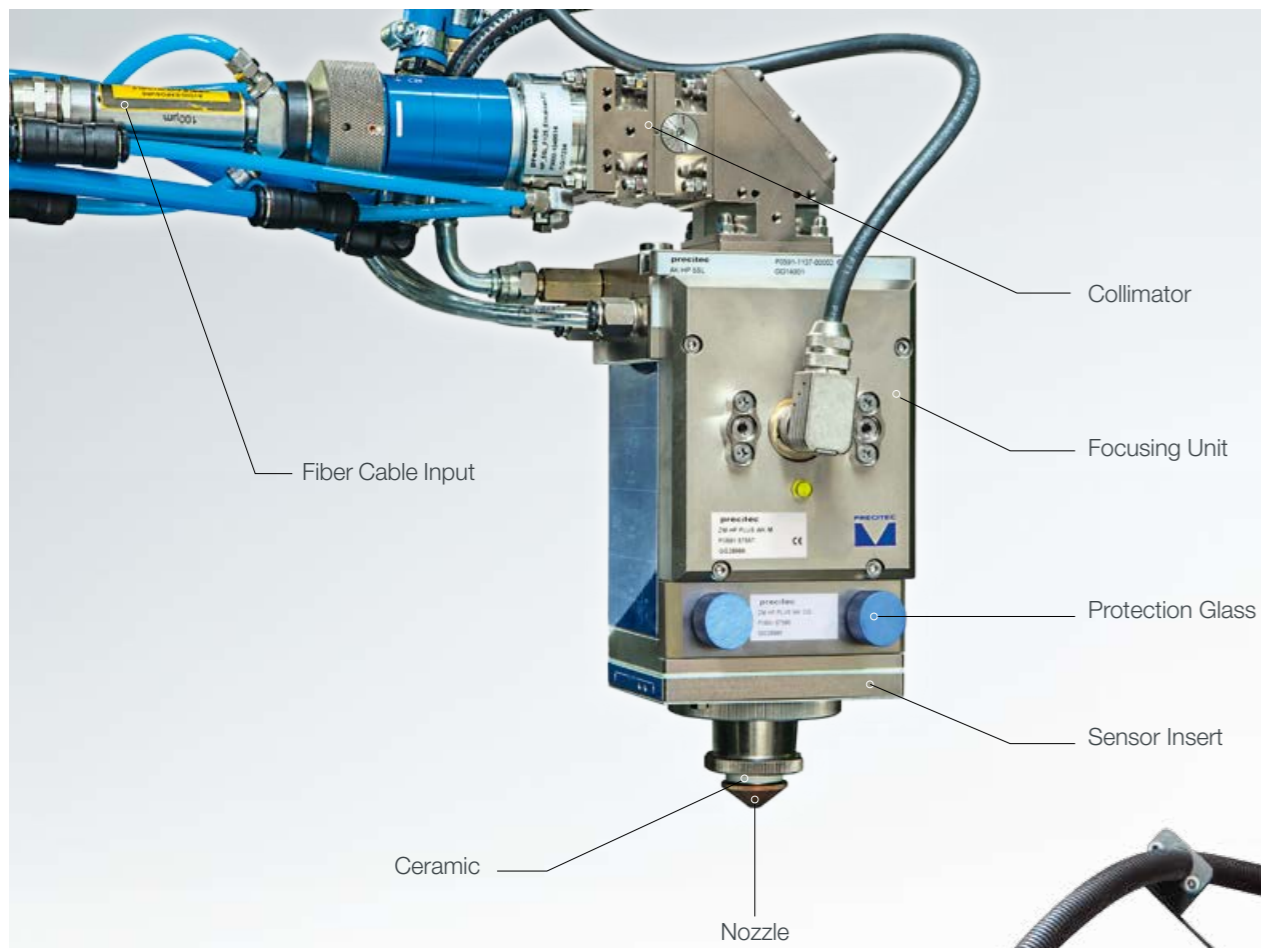
- The balanced control provides smooth vertical movements for each shuttle table ensuring a controlled descent with heavy loads, preventing the collapse of parts.

## Two Dynamic Tables for Continuous Cutting



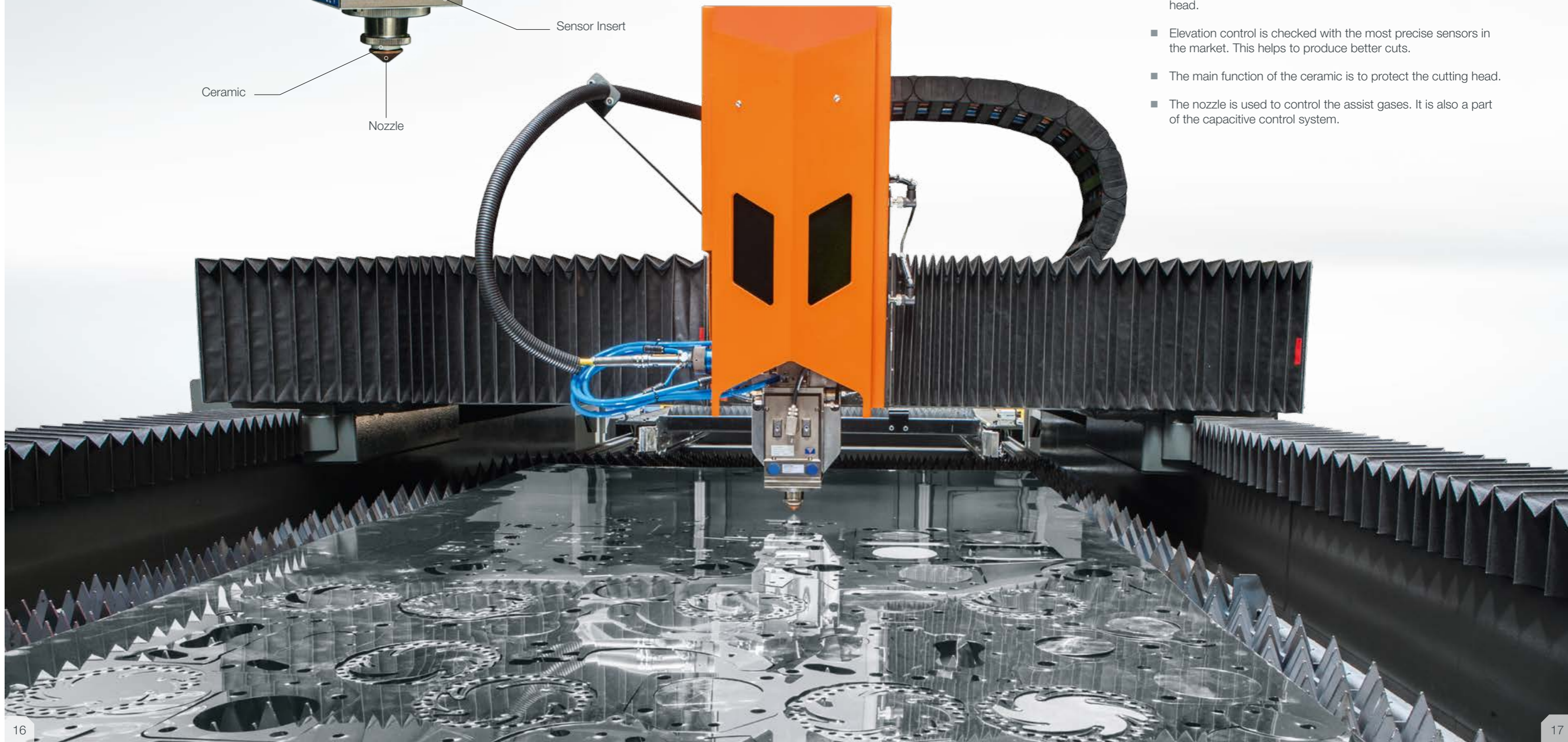
CNC control panel at the back of Machine allows direct Shuttle table control.

Light Barriers (CE)  
Protects the work zone and staff.



## CUTTING HEAD

- The laser beam is delivered to the cutting head by fiber optic cable.
- The fiber optic cable is fixed to the input of cutting head.
- The laser is delivered to the focusing unit after being aligned in the collimator.
- The laser beam is set to desired focus using the lenses in the focusing unit.
- The protection glass protects the lenses from the particles which are caused by the cutting operation.
- The sensor insert is part of the elevation control system and helps to adjust the distance between material and cutting head.
- Elevation control is checked with the most precise sensors in the market. This helps to produce better cuts.
- The main function of the ceramic is to protect the cutting head.
- The nozzle is used to control the assist gases. It is also a part of the capacitive control system.





## CONTROLLER

- The controller lets the operator command the machine.
- The controller is durable to all environmental effects like shock, vibration, dirt, moisture, high temp, electromagnetic zone, harsh usage etc.
- Active touch screen and functional keyboard.
- Short cut buttons provide ease-of-use. You can access the desired functions faster and easier. The buttons can be set to any desired function.
- Speed adjustment potentiometer allows you to adjust the axes velocities even during the cutting operation.

All software on the controller is developed by Ermaksan's Engineer Team. They include the most anticipated features that an end user would expect. Customer specific features are engineered and added.

# POWER IS UNDER YOUR CONTROL



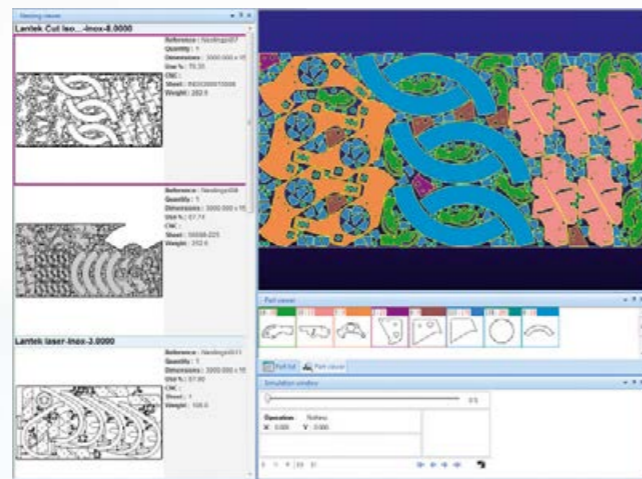
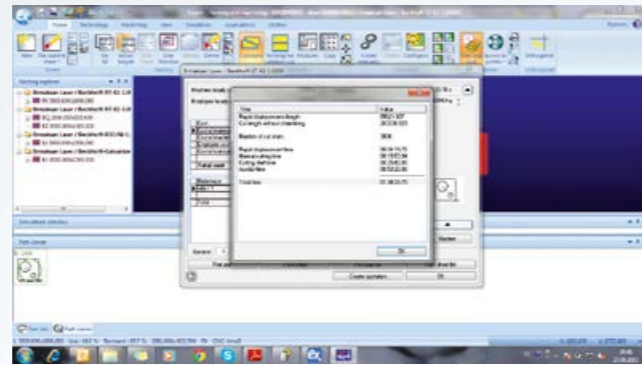
## USER FRIENDLY BUTTONS

- Any function programmed with the user friendly buttons, may be operated with one key.
- Provides automatic shuttle table control, conveyor, extraction unit, laser unit control, focus reference, HSU calibration, shut down and service positions, etc..
- Specific functions are easily reached with user friendly buttons, instead of surfing through the pages in HMI monitor.

# LANTEK EXPERT CUT CAD/CAM SOFTWARE

## TECHNICAL FEATURES

- All the options of Lantek Expert are fully integrated in one single program: designing a part, importing, nesting (automatic or manual), generating the cut (automatic or manual), generating the CNC etc. will be achieved from the same program without switching.
- Production Management Processes: Lantek Expert is ready for connection to production management systems (ERP) by means of automatic processes.
- Teamwork: Available for operation as a standalone productivity cell, or as part of a network system.
- Part Management and sheet store with open databases: All part info is saved and organized in databases so that users can easily locate the part and sheet required. The remnant automatically generated by the system is saved in the sheet inventory like any other sheet metal and can be used for future jobs.
- Large library of parametric parts
- Calculation of real time and cost: Lantek Expert calculates cutting time and cost of the entire sheet. Taking into account the number of piercings, the cut length, the mark length, the material costs, the hourly machine rate, the cost of consumables are based on the machine data.
- 2D design. Lantek Expert includes advanced options for geometry and editing.



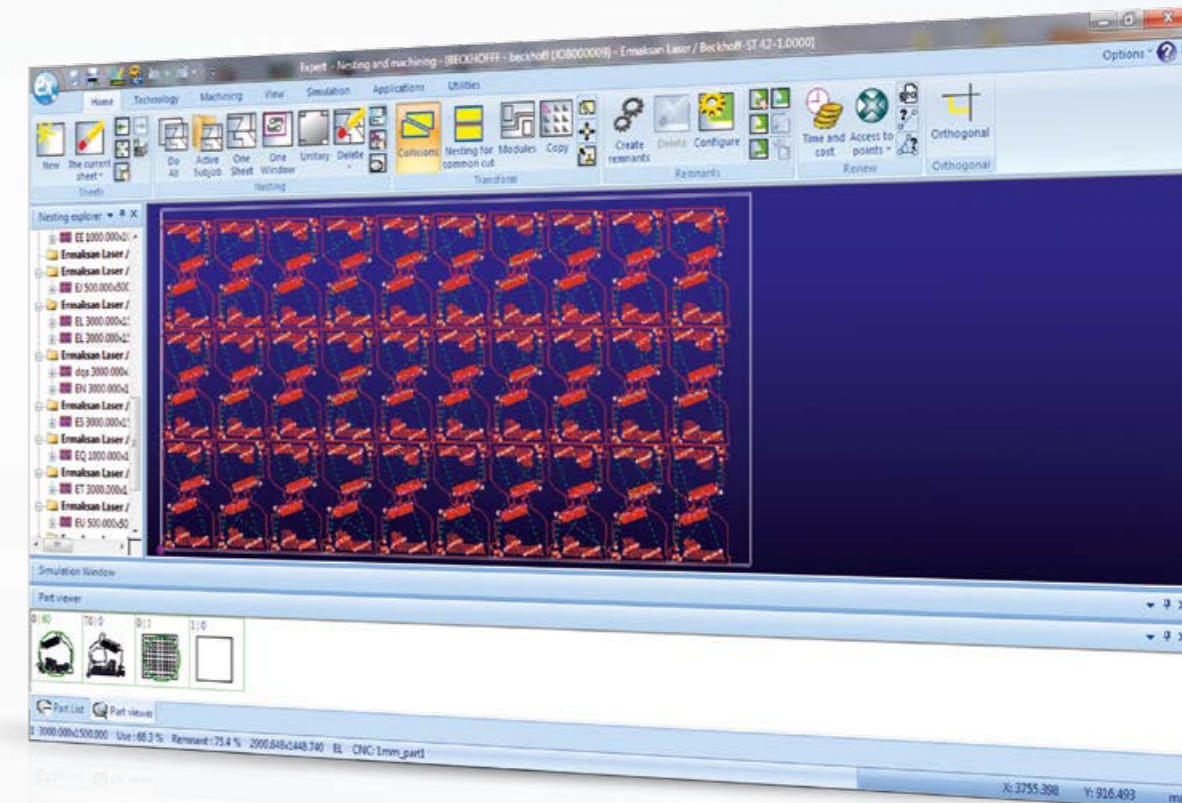
## TECHNOLOGY

- Lantek Expert Cut allows to configure and manage the type and value of lead-in/lead outs for different types of contours.
- Common line cutting can be achieved on several parts or just limit to pairs of parts. With microjoints and pre-cuts.
- It detects errors in the design and machining.
- Lantek Expert Cut has automatic lead-ins, manual and automatic cutting, machining copy, customised machine configuration, and postprocessor for all types of machine.

## AUTOMATIC NESTING

- Manual and automatic nesting with great flexibility and maximum performance.
- The perfect combination of automatic and semi-automatic nesting along with powerful manual nesting functions like: copying, moving, rotating, adjoining, etc
- Lantek Expert's automatic nesting optimises to the maximum arrangement of parts on the sheet.
- Lantek Expert generates nestings on remnants. Just like for sheets, margins can be defined for remnants.

- Excellent flexibility and maximum performance
- Minimum part consumption
- Design error detection
- Real-time and cost calculation



**lantek**  
Sheet Metal Solutions

- On request instead of Lantek, Metalix, Almacam or similar CAD/CAM software is standard.

## CUTTING QUALITY

# High-Speed and Excellent Quality Cuts

- FIBERMAK Momentum Gen-2 is designed to cut different thicknesses and types of materials such as steel, stainless steel, aluminum, brass, copper and galvanized steel.
- Perfect cut quality is achieved by precise cutting parameters prepared by Ermaksan engineers. When necessary, the operator can also change the parameters.
- Laser unit can be selected between 500 W to 6 kW. Selection of the laser cutting unit power, directly relates to the thickness and cutting speeds of the machine. The following table shows a list of the materials that can be cut by the FIBERMAK.



Materials	Maximum cutting thickness					
	Laser Power 500 W	Laser Power 1 kW	Laser Power 2 kW	Laser Power 3 kW	Laser Power 4 kW	Laser Power 6 kW
Mild Steel	5 mm	8 mm	15 mm	18-20 mm	18-20 mm	25 mm
Stainless steel	2 mm	4 mm	8 mm	10 mm	10 mm	15 mm
Aluminum	2 mm	3 mm	6 mm	8 mm	10 mm	15 mm
Copper	1 mm	2 mm	5 mm	5 mm	5 mm	8 mm
Brass	1 mm	2 mm	4 mm	4 mm	4 mm	8 mm
Galvanized	1 mm	2 mm	4 mm	4 mm	4 mm	8 mm

# TECHNOLOGICAL ADVANTAGE OF FIBERMAK

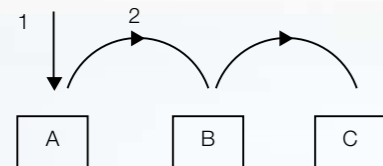
- It reaches high- acceleration and fast motion with high powered motors.
- Ultra fast communication with EtherCAT.
- Lift passing-type provides an ultra high transition between parts.
- For thin material: No Pierce, No Lead In, prevents unnecessary time and energy loss.
- Processing is performed with active G code structure

## Powerful motors provide high acceleration and speed

The most time loss is during the cutting and movement between the parts. Here, the acceleration of the axes is very important. Fibermak servo motor machines run, 1.5 G acceleration and 2.4 m/sec speed, linear motor machines run 2.5 G acceleration and 2.8 m/sec speed. This provide a serious time advantage passing through the parts.

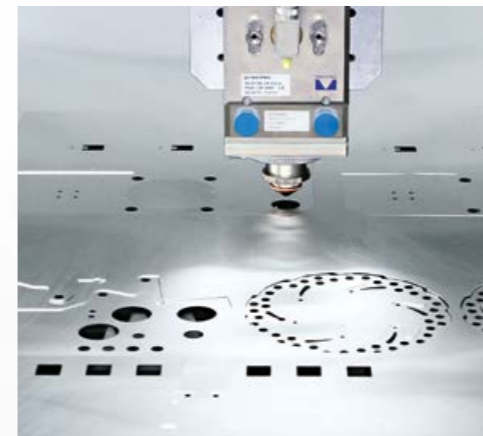
## Lift type transition enables high-speed movement between parts

Velocity and acceleration speed is important while moving between the parts. FIBERMAK Momentum Gen-2 uses part and aperture avoidance, raising the cutting head in the cycle, which allows you to reach maximum speed.



The cutting of part A is finished, the head moves to part B. The cutting head uses maximum acceleration and speed by using an Arc movement.

## You can prevent time and energy loss while cutting thin materials by using No Pierce and No Lead In features.



Fibermak Momentum Gen-2 incorporates fast part processing techniques allowing you to save time and reduce energy waste during production.

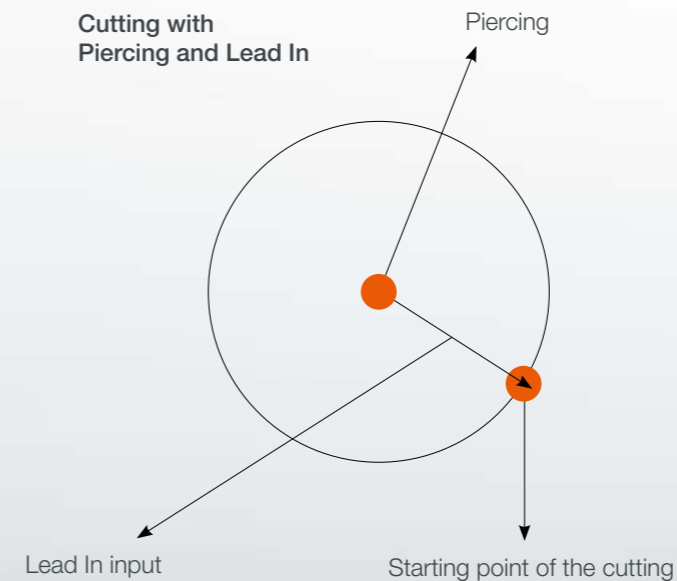
### ■ Cutting with No Pierce (Hole-less Cutting)

Cutting thin sheet metal without piercing gives a significant economic advantage.

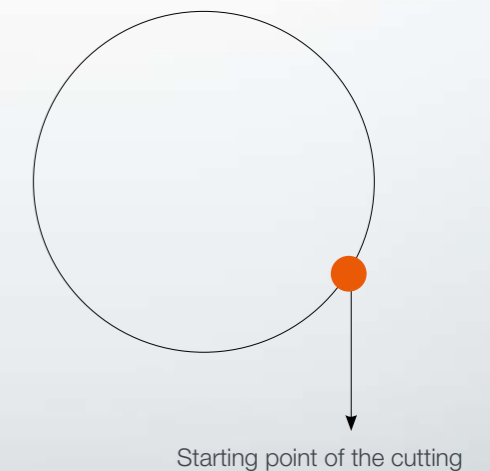
### ■ Cutting with No Lead In

No Lead In is cutting without passing, providing much faster cutting speeds.

Cutting with Piercing and Lead In



Cutting with No Pierce and No Lead



## Ultra fast communication with EtherCAT

Using EtherCAT connections allows for ultra fast communication result in the faster control. Increasing the speed of control, ie Laser on/off speed, gas on/off speed etc. increases cutting capacities.

## Fly-CUT feature

Both circular and equilateral parts can be cut with Fly-Cut feature of Fibermak Momentum Gen-2.

## Cutting processing is performed with active G code structure within minimum duration

G code flow is important when performing any action on the Fibermak with a CNC controller. G code flow on the Fibermak is designed to achieve the desired result using the shortest route. The time loss is minimized during operational transitions.

# USER FRIENDLY (interface)

- Easy interface design
- User Friendly
- Control from single-point
- Practical solutions

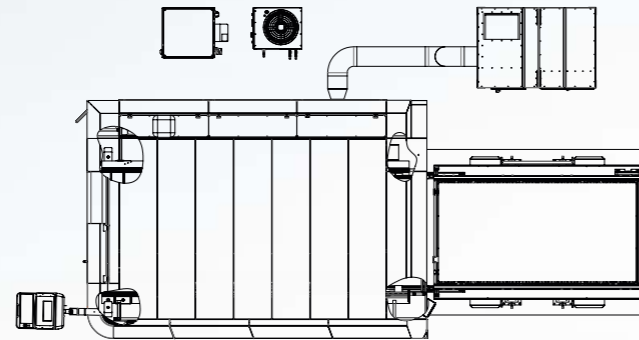
- **Job repeat, sheet and angle detection**  
Starting point and sheet angle detection are all features of the Fibermak.
- **Only pierce feature**  
Achieve high-quality cuts while cutting thick sheets.
- **Online parameter changing**  
Operator can make changes to the parameters during the cutting process.
- **Graphical chase with NC Graphic**  
Watching the real time cutting process graphically with NC Graphics.
- **Practical solutions**  
Axis move to the start point with pressing just one button.
- **Burning film**  
You can find various film burning options.
- **Instant quality control**  
You can check the quality of the cut parts instantly.
- **Work report at PDF format**  
You can keep detailed work report as PDF of the cutting process.
- **Record all errors**  
All errors and warnings are recorded by the machine.
- **Wireless connection and service**  
You can connect to the machine remotely whenever needed with an Internet connection provided by wireless modem, USB type adapter or 3G modem.



- **Delete failure**  
If an alarm sound during cutting process the machine stops automatically. After the problem has been fixed the operator can delete the error and continue production.
- **One Shot via HMI**  
You can easily make laser focal adjustment with one shot feature.
- **Running LaserNET from HMI**  
LaserNET program which provide to reach the informations with Laser unit also can be running via HMI.
- **Focus tests**  
Focus optimization can be made manually via HMI. IT makes easier to access technical service, one-shot focus etc.
- **Real-time I/O informing**  
The digital-analog I/O information can be seen in real-time via HMI.
- **Rapid changing during the cut**  
You can reduce or increase the speed during the cutting process.
- **Inch-Meter conversion**  
Fibermak can work in both inch and metric.
- **Languages**  
As standard includes English, German, French, Russian, Italian, Spanish, Dutch and Arabic.
- **CAD/CAM programs**  
CAD/CAM programs such as Lantek, Metalix and Almacam can all be used.
- **Gas control with PID**  
Faster, better and more precise cuts with PID.

## OPTIONAL EQUIPMENT

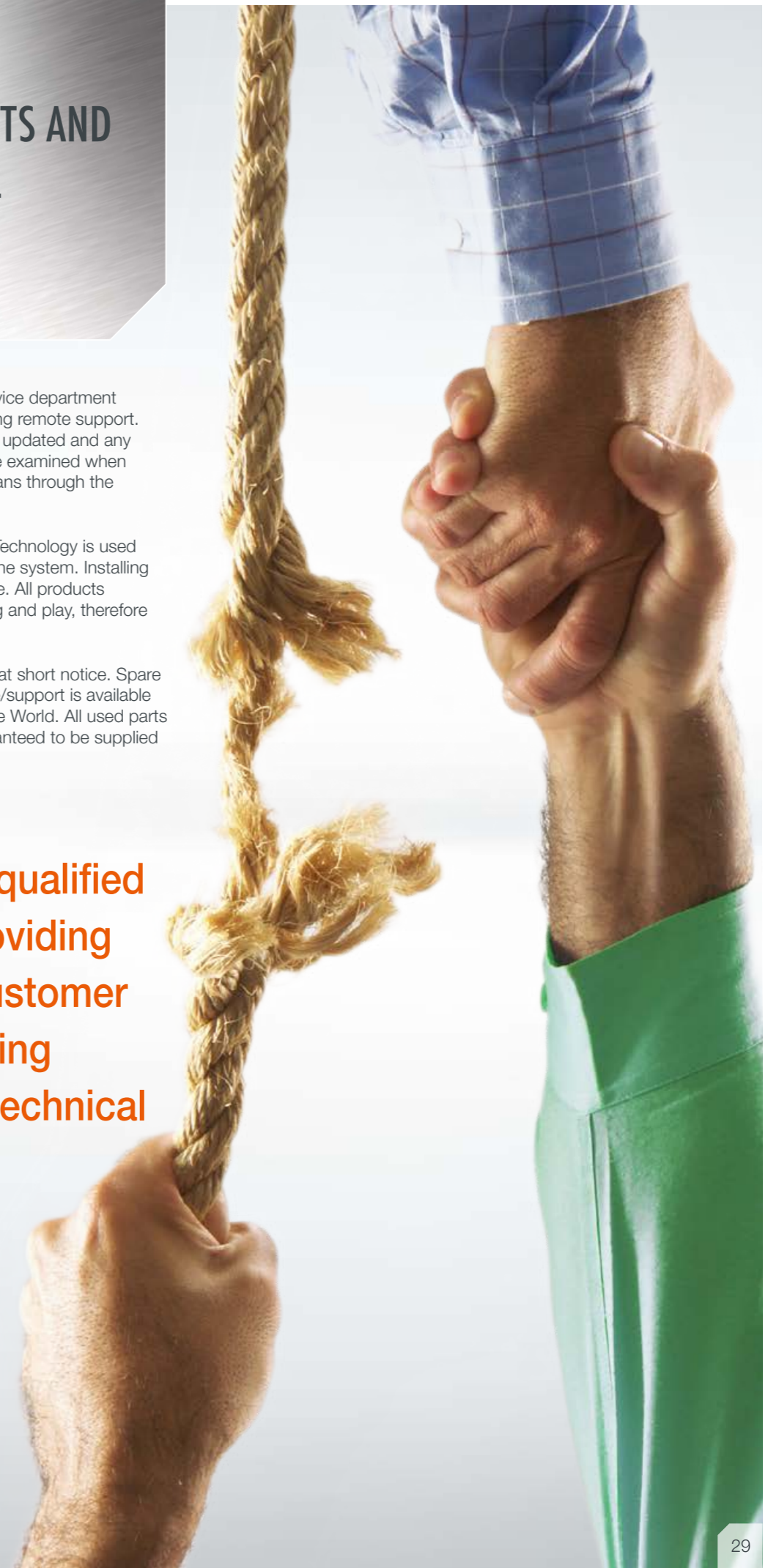
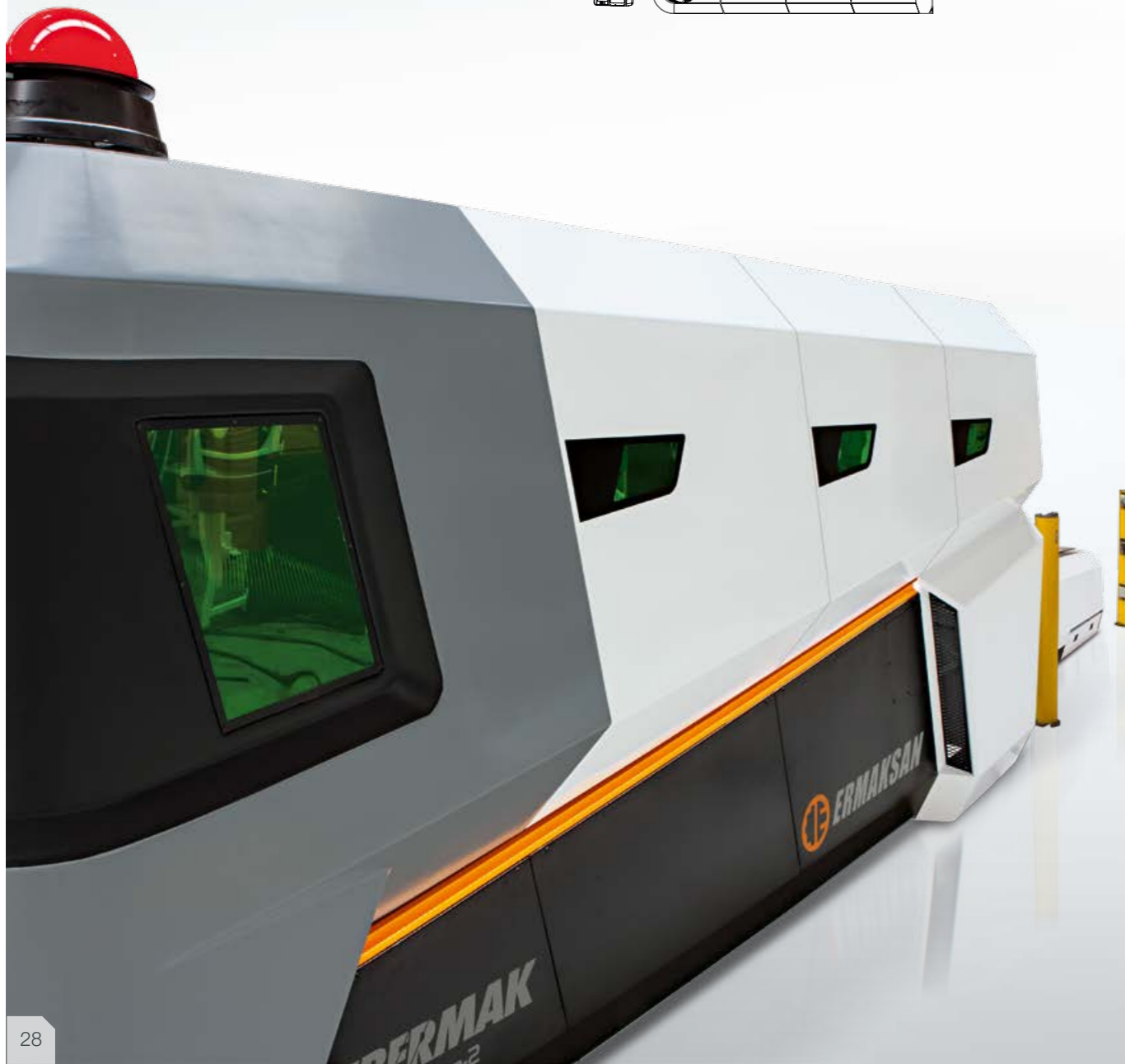
- Linear motor technology.
- 3 kW, 4 kW and 6 kW laser source options.
- Extraction unit.
- Light safety barrier.
- Air conditioner for automation panel.
- Metalix, Almacam etc. CAD/CAM software.



## SPARE PARTS AND TECHNICAL SERVICE

- Ermaksan's technical service department can assist customers using remote support. Machine software can be updated and any possible problems can be examined when accessed by the technicians through the remote access feature.
- The best of the German Technology is used in all control units within the system. Installing spare parts is quite simple. All products designed as modular plug and play, therefore you can easily replaced.
- Spare parts are available at short notice. Spare part and technical service/support is available in 62 countries around the World. All used parts and spare parts are guaranteed to be supplied for 10 years.

**Ermaksan qualified team is providing flawless customer support using extensive technical service.**



# LINEAR ENGINE TECHNOLOGY

(Optional)

- High velocity and acceleration
- Zero maintenance cost
- Micron-sensible positioning control

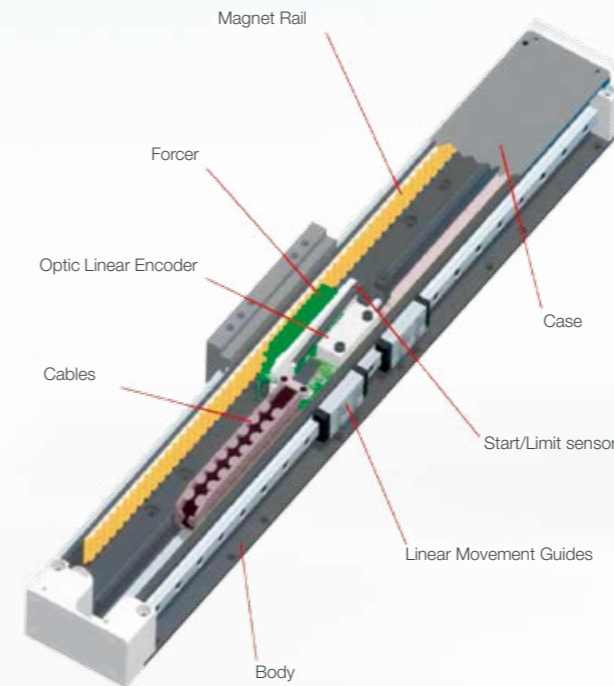
Linear motor technology is used on Fibermak's bridge movement.

## The working principle of the Linear Engine

- The working principle of the Linear Motor is based upon the laws of magnetism. Two magnets apply force to each other when placed face to face. If opposite poles are placed, the magnets will pull together, if same poles are placed magnets will push apart.

## The principle of movement

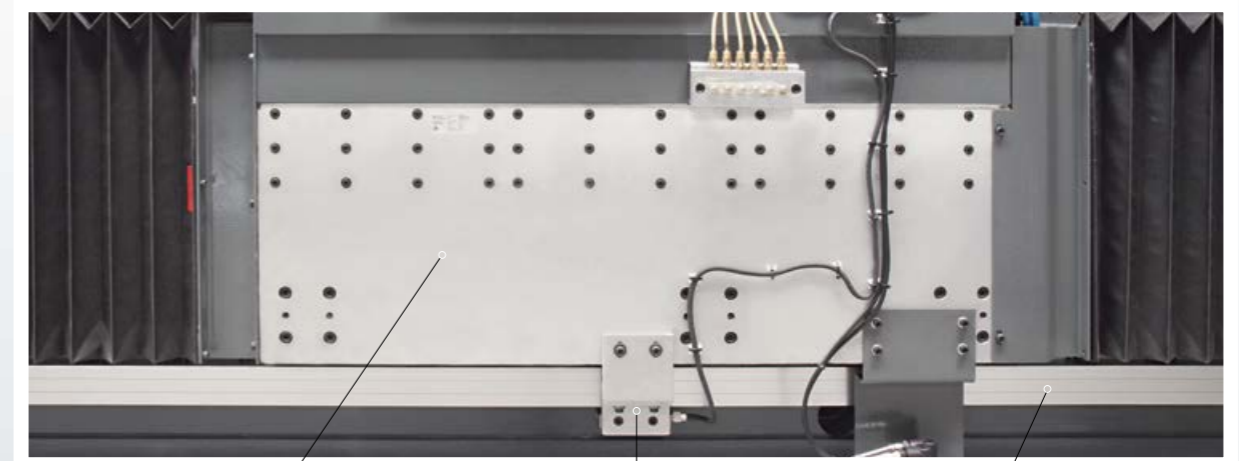
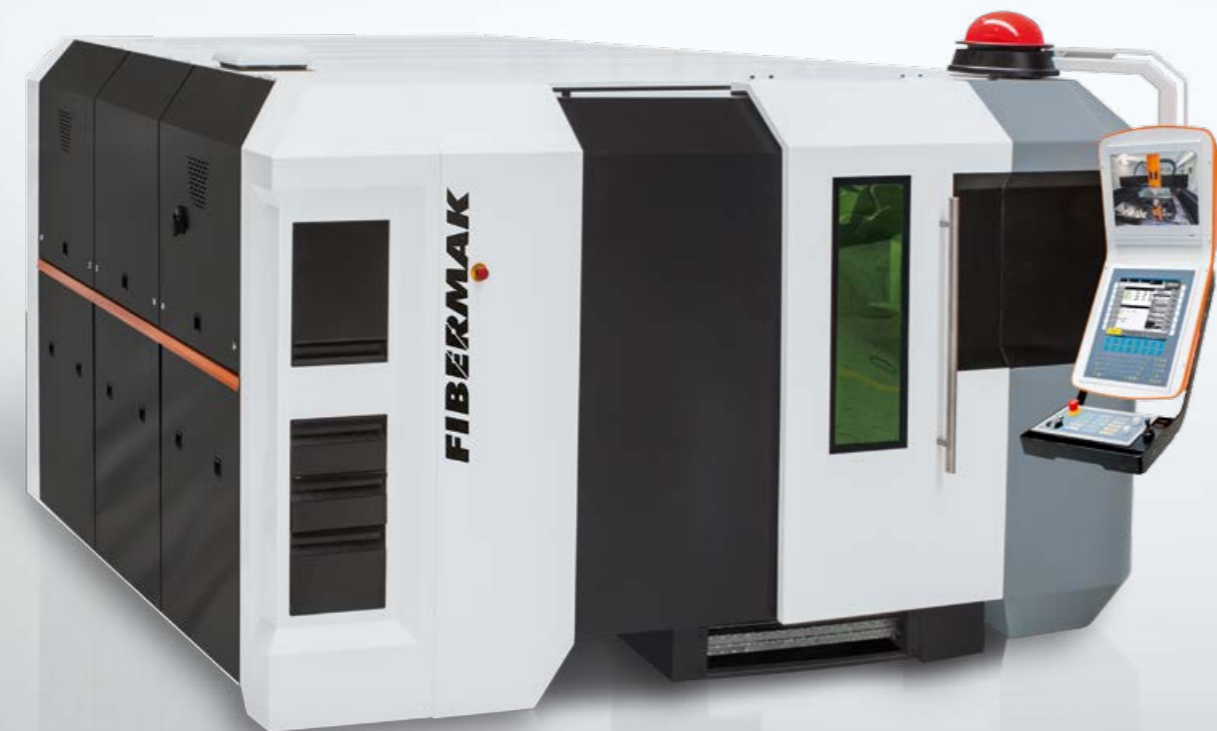
- The moving part of a linear motor is directly coupled to the machine load, saving space, simplifying machine design, eliminating backlash, and removing potential failure sources: Ballscrew systems, couplings, belts, or other mechanical transmissions. Finally, the bandwidth and the stiffness of the motion system are much higher, giving better positional repeatability and accuracy over unlimited travel at higher speeds.



On Linear Motors, position information is read from linear encoders by an optical receiver.

Linear motors are working in a frictionless environment.

- Rapid speed and acceleration.
- Maintenance-free.



Linear Motor

Linear Encoder (Optic Reader)

Linear Scale

# TECHNICAL FEATURES

## SERVO DRIVE

TECHNICAL FEATURES		SM 500.2.5X1.25	SM 500.3x1.5	SM 1000.2.5x1.25	SM 2000.2.5x1.25	SM 1000.3x1.5	SM 2000.3x1.5	SM 3000.3x1.5	SM 4000.3x1.5	SM 2000.4x2	SM 3000.4x2	SM 4000.4x2	SM 2000.6x2	SM 3000.6x2	SM 4000.6x2	SM 3000.8x2,5	SM 4000.8x2,5
RESONATOR	Watt	YLR 500	YLR 500	YLR 1000	YLS 2000	YLR 1000	YLS 2000	YLS 3000	YLS 4000	YLS 2000	YLS 3000	YLS 4000	YLS 2000	YLS 3000	YLS 4000	YLS 3000	YLS 4000
POWER RANGE	%	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105
LASER BEAM QUALITY	rad	0,37	0,37	1 - 2	2 - 2.5	1 - 2	2 - 2.5	2 - 2.5	2 - 2.5	2 - 2.5	2 - 2.5	2 - 2.5	2 - 2.5	2 - 2.5	2 - 2.5	2 - 2.5	2 - 2.5
POWER STABILITY	%	± 0,5	± 0,5	1 - 3	1 - 2	1 - 3	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2	1 - 2
PULSE FREQUENCY RANGE	kHz	50	50	5	5	5	5	5	5	5	5	5	5	5	5	5	5
LASER WAVE LENGTH	nm	1070	1070	1070 ± 5	1075 ± 5	1070 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1075 ± 5
OUTPUT FIBER CORE DIAMETER	µm	50	50	50	100	50	100	100	100	100	100	100	100	100	100	100	100
EXCITATION	0	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode
COOLING WATER FLOW RATE	l/min	6	6	8	10	8	10	20	20	10	20	20	10	20	20	20	20
CUTTING CAPACITY (High Quality)																	
MILD STEEL	mm	5	5	8	15	8	15	18	20	15	18	20	15	18	20	18	20
STAINLESS STEEL	mm	2	2	4	10	4	10	10	12	10	10	12	10	10	12	10	12
ALUMINIUM	mm	2	2	3	8	3	8	8	10	8	8	10	8	8	10	8	10
BRASS	mm	1	1	2	5	2	5	6	6	5	6	6	5	6	6	6	6
COPPER	mm	1	1	2	5	2	5	6	6	5	6	6	5	6	6	6	6
MAXIMUM WORKSHEET DIMENSIONS	mm	2500 X 1250	3000 X 1500	2500 X 1250	2500 X 1250	3000 X 1500	3000 X 1500	3000 X 1500	3000 X 1500	4000 X 2000	4000 X 2000	4000 X 2000	6150 X 2000	6150 X 2000	6150 X 2000	8000 X 2500	8000 X 2500
MAXIMUM BURDEN CAPACITY	kg	600	1500	600	600	1500	1500	1500	1500	2500	2500	2500	4000	4000	4000	6000	6000
MACHINE AXES	-	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]	4-Axes [X, Y, Z, U]
AXIAL MOVEMENTS																	
X, U AXES	mm	2550	3050	2550	2550	3050	3050	3050	3050	4050	4050	4050	6200	6200	6200	8050	8050
Y AXIS	mm	1270	1550	1270	1270	1550	1550	1550	1550	2050	2050	2050	2050	2050	2050	2550	2550
Z AXIS	mm	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
ACCELERATIONS																	
X, U AXES	G	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1	1
Y AXIS	G	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Z AXIS	G	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
MAXIMUM AXES VELOCITIES	m/min	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	141 (simultaneous) (X, Y single axis velocity 100 m/min)	115 (simultaneous) (X, Y single axis velocity 80 m/min)	115 (simultaneous) (X, Y single axis velocity 80 m/min)
POSITIONING ACCURACY	mm/m	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03
REPETITION ACCURACY	mm	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015
SHUTTLE TABLE (Automatic Loading - Unloading Unit)	palette	2 (30 sec)	2 (35 sec)	2 (30 sec)	2 (30 sec)	2 (35 sec)	2 (35 sec)	2 (35 sec)	2 (35 sec)	2 (45 sec)	2 (45 sec)	2 (45 sec)	2 (65 sec)	2 (65 sec)	2 (65 sec)	2 (90 sec)	2 (90 sec)
ASSIST GAS																	
MILD STEEL	-	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)
STAINLESS STEEL	-	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)	Nitrogen (0,5-25 Bar)
ALUMINIUM	-	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)
CUTTING HEAD	-	Precitec Light Cutter Head	Precitec Light Cutter Head	Precitec Light Cutter Head	Precitec HPSSL Plus Motorised Head	Precitec Light Cutter Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head
CNC	-	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242
CAD/CAM SOFTWARE	-	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT
NETWORK CONNECTION	-	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet
OPERATION VIA PANEL	-	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard
TOTAL ELECTRIC POWER NECESSITY	kW	11	11	15	18	15	18	22	26	18	23	22	18	22	26	22	26
MACHINE DIMENSIONS (L x W x H)	mm	8190 X 3460 X 2200	9190 X 3710 X 2200	8190 X 3460 X 2200	8190 X 3460 X 2200	9190 X 3710 X 2200	9190 X 3710 X 2200	9190 X 3710 X 2200	9190 X 3710 X 2200	11400 X 4300 X 2200	11400 X 4300 X 2200	11400 X 4300 X 2200	15430 X 4300 X 2200	15430 X 4300 X 2200	15430 X 4300 X 2200	19730 X 4900 X 2200	19730 X 4900 X 2200
MACHINE WEIGHT	kg	10400	11200	10400	10400	11200	11200	11200	11200	15800	15800	15800	22100	22100	22100	28500	28500

\*All specs are subject to change without notice

# TECHNICAL FEATURES

## LINEAR DRIVE

TECHNICAL FEATURES		LM 1000.3x1.5	LM 2000.3x1.5	LM 3000.3x1.5	LM 4000.3x1.5	LM 1000.4x2	LM 2000.4x2	LM 3000.4x2	LM 4000.4x2	LM 1000.6x2	LM 2000.6x2	LM 3000.6x2	LM 4000.6x2
RESONATOR	Watt	YLR 1000	YLS 2000	YLS 3000	YLS 4000	YLR 1000	YLS 2000	YLS 3000	YLS 4000	YLR 1000	YLS 2000	YLS 3000	YLS 4000
POWER RANGE	%	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105	10-105
LASER BEAM QUALITY	rad	1 - 2	2 - 2.5	2 - 2.5	2 - 2.5	1 - 2	2 - 2.5	2 - 2.5	2 - 2.5	1 - 2	2 - 2.5	2 - 2.5	2 - 2.5
POWER STABILITY	%	1 - 3	1 - 2	1 - 2	1 - 2	1 - 3	1 - 2	1 - 2	1 - 2	1 - 3	1 - 2	1 - 2	1 - 2
PULSE FREQUENCY RANGE	kHz	5	5	5	5	5	5	5	5	5	5	5	5
LASER WAVE LENGTH	nm	1070 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1070 ± 5	1075 ± 5	1075 ± 5	1075 ± 5	1070 ± 5	1075 ± 5	1075 ± 5	1075 ± 5
OUTPUT FIBER CORE DIAMETER	µm	50	100	100	100	50	100	100	100	50	100	100	100
EXCITATION	0	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode	Laser diode
COOLING WATER FLOW RATE	l/min	8	10	20	20	8	10	20	20	8	10	20	20
CUTTING CAPACITY (High Quality)													
MILD STEEL	mm	8	15	18	20	8	15	18	20	8	15	18	20
STAINLESS STEEL	mm	4	10	10	12	4	10	10	12	4	10	10	12
ALUMINIUM	mm	3	8	8	10	3	8	8	10	3	8	8	10
BRASS	mm	2	5	6	6	2	5	6	6	2	5	6	6
COPPER	mm	2	5	6	6	2	5	6	6	2	5	6	6
MAXIMUM WORKSHEET DIMENSIONS	mm	3000 X 1500	3000 X 1500	3000 X 1500	3000 X 1500	4000 X 2000	4000 X 2000	4000 X 2000	4000 X 2000	6150 X 2000	6150 X 2000	6150 X 2000	6150 X 2000
MAXIMUM BURDEN CAPACITY	kg	1500	1500	1500	1500	2500	2500	2500	2500	4000	4000	4000	4000
MACHINE AXES	-	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]	4-Axes [X,Y,Z,U]
AXIAL MOVEMENTS													
X, U AXES	mm	3050	3050	3050	3050	4050	4050	4050	4050	6200	6200	6200	6200
Y AXIS	mm	1550	1550	1550	1550	2050	2050	2050	2050	2050	2050	2050	2050
Z AXIS	mm	150	150	150	150	150	150	150	150	150	150	150	150
ACCELERATIONS													
X, U AXES	G	2	2	2	2	2	2	2	2	2	2	2	2
Y AXIS	G	2	2	2	2	2	2	2	2	2	2	2	2
Z AXIS	G	2	2	2	2	2	2	2	2	2	2	2	2
MAXIMUM AXES VELOCITIES	m/min	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)	170 (simultaneous) (X, Y single axis velocity 120m/min)
POSITIONING ACCURACY	mm/m	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03	± 0,03
REPETITION ACCURACY	mm	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015	± 0,015
SHUTTLE TABLE (Automatic Loading - Unloading Unit)	palette	2 ( 35 sec )	2 ( 35 sec )	2 ( 35 sec )	2 ( 35 sec )	2 ( 45 sec )	2 ( 45 sec )	2 ( 45 sec )	2 ( 45 sec )	2 ( 65 sec )	2 ( 65 sec )	2 ( 65 sec )	2 ( 65 sec )
ASSIST GAS													
MILD STEEL	-	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-6 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)	Oxygen (0,5-25 Bar)
STAINLESS STEEL	-	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)	Nitrogen ( 0,5-25 Bar)
ALUMINIUM	-	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)	Dry Air or Nitrogen (0,5-25 Bar)
CUTTING HEAD	-	Precitec Light Cutter Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec Light Cutter Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec Light Cutter Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head	Precitec HPSSL Plus Motorised Head
CNC	-	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242	BECKHOFF CP6242
CAD/CAM SOFTWARE	-	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT	LANTEK EXPERT CUT
NETWORK CONNECTION	-	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet
OPERATION VIA PANEL	-	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard	15" touch screen display, alpha numeric keyboard
TOTAL ELECTRIC POWER NECESSITY	kW	17	20	24	28	17	20	24	28	17	20	24	28
MACHINE DIMENSIONS ( L x W x H )	mm	9190 X 3710 X 2200	9190 X 3710 X 2200	9190 X 3710 X 2200	9190 X 3710 X 2200	11400 X 4300 X 2200	11400 X 4300 X 2200	11400 X 4300 X 2200	11400 X 4300 X 2200	15430 X 4300 X 2200	15430 X 4300 X 2200	15430 X 4300 X 2200	15430 X 4300 X 2200
MACHINE WEIGHT	kg	11200	11200	11200	11200	15800	15800	15800	15800	22100	22100	22100	22100

\*All specs are subject to change without notice



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